



Physical Research Laboratory, Ahmedabad

COLLOQUIUM – 14 – 12

- Speaker:** Dr. R. N. Singh
INSA Senior Scientist, CSIR-NGRI, Hyderabad.
- Title:** “Bayesianism in Geosciences”
- Time:** Wednesday, 08 October, 2014, 16.00 hrs.
- Venue:** Seminar Hall, Above NANOSIMS Laboratory, PRL.

Abstract

Geosciences construct knowledge by using deduction, induction and abduction. Earth has a complex history replete with unique events. This leaves only little scope for deduction, leaving induction and abduction as alternatives. Most research is reduced to either estimation of parameters or selection among hypotheses, both beset with uncertainties. Currently, Bayesianism is preferred in geosciences to deal with all kinds of uncertainties. In the Bayesianism, both the parameters and hypotheses are taken as random variables. Bayes theorem is used to get posterior distribution of parameters or hypotheses which is proportional to their prior probabilities and likelihood function of the data. All which we need to infer or decide are derived from the posterior distribution, mostly using Monte Carlo methods. However, subjectivity in choosing prior distribution invites scope for scepticism in the results. In this talk speaker will discuss the scope and pitfalls of Bayesian methodology in geosciences, with an example of understanding climate change from borehole temperature data.

The Speaker

Dr. Rishi Narain Singh obtained B.Sc. (1962), M.Sc. (1964) and Ph.D., from Banaras Hindu University. He joined the newly established National Geophysical Research Institute (NGRI), Hyderabad in 1964 and largely remained there. Between 1970 and 73, he was postdoctoral Fellow at Dalhousie University, Halifax and Memorial University of Newfoundland, St John's. He was Scientist-in-Charge, CSIR Centre for Mathematical Modelling and Computer Simulation (CMMACS) (1996-99); Director, National Environmental Engineering Research Institute (NEERI), Nagpur (1999-2003); and Associate Professor, Indian Institute of Geomagnetism (IIG) (briefly in 1989). Currently he is CSIR Emeritus Scientist at NGRI, Hyderabad. Dr. Singh's research interest is in the field of Geophysics, Geophysical and Environmental Modelling. He has authored over 145 research articles and a book. He served on the editorial boards of the Journal of Earth System Sciences of Indian Academy of Sciences and Proceedings of the Indian National Science Academy (Physical Sciences). He was also INSA Council Member (2000-02). Dr. Singh was conferred the S.S. Bhatnagar Prize (1985), UGC National Lecturer ship (1987), IGU Decennial Medal (2003) and Diamond and Platinum Jubilee Lectureships of Indian Science Congress and Geoscience Award of Ministry of Earth Sciences, Government of India (2014). He has been President, Indian Association of Environmental Management; and Vice President of Indian Geophysical Union. He was elected Fellow of all the Indian Academies, Indian Geophysical Union, Association of Exploration Geophysicists, and Maharashtra Academy of Sciences.

Tea at 15:30 hrs.

ALL ARE WELCOME

